

JPRS 68661

22 February 1977

TRANSLATIONS ON ENVIRONMENTAL QUALITY

No. 131

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

U. S. JOINT PUBLICATIONS RESEARCH SERVICE

20000308 110

REPRODUCED BY
**NATIONAL TECHNICAL
INFORMATION SERVICE**
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

**Reproduced From
Best Available Copy**

WORLD

WIDE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22151. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

BIBLIOGRAPHIC DATA SHEET	1. Report No. JPRS 68661	2.	3. Recipient's Accession No.
	4. Title and Subtitle TRANSLATIONS ON ENVIRONMENTAL QUALITY, NO. 131		5. Report Date 22 February 1977
7. Author(s)		8. Performing Organization Rept. No.	6.
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201		10. Project/Task/Work Unit No.	11. Contract/Grant No.
12. Sponsoring Organization Name and Address As above		13. Type of Report & Period Covered	14.
15. Supplementary Notes			
16. Abstracts The serial report contains translations from the world press of articles and press commentary on environmental pollution and its effects and pollution control technology, organizations, and programs.			
17. Key Words and Document Analysis. 17a. Descriptors Worldwide Pollution Environmental Control Meteorology Ecology 17b. Identifier: /Open-Ended Terms 17c. COSATI Field/Group 4, 6, 18G, 18H			
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22151		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 40
		20. Security Class (This Page) UNCLASSIFIED	22. Price

22 February 1977

TRANSLATIONS ON ENVIRONMENTAL QUALITY

No. 131

CONTENTS

PAGE

ASIA

JAPAN

- Japanese Fishermen Protest Russian Polluting
(KYODO, 21 Jan 77)..... 1

EASTERN EUROPE

EAST GERMANY

- Water Supply Facilities, Future Requirements Outlined
(BAUERN-ECHO, 1/2 Jan 77)..... 2
- Institute Director Discusses Storage of Nuclear Waste
(Flach; SAECHSISCHE ZEITUNG, 15/16 Jan 77)..... 4
- Briefs
Water Supply Increases..... 5

YUGOSLAVIA

- Conference on Environmental Protection Held in Montenegro
(PRIVREDNI PREGLED, 15 Dec 76)..... 6
- Pollution Data on Montenegrin Coastal Waters
(I. Elezovic, et al.; GLASNIK POLJOPRIVREDNE
PROIZVODNJE, PRERADE I PLASMANA, Dec 76)..... 8

USSR

- Water Purification Techniques Listed
(SOTSIALISTICHESKAYA INDUSTRIYA, 19 Sep 76)..... 15
- Soviet-Finnish Commission on Environmental Protection Meets
(Nikolay Kotlyarov; SOVETSKAYA ESTONIYA, 7 Jan 77)..... 18

CONTENTS (Continued)

Page

Shortage of Sewage Treatment Facilities Cited (K. Sharonov; EKONOMICHESKAYA GAZETA, Dec 76).....	20
Standards for Environmental Protection in Latvia Described (L. Terekhova; SOVETSKAYA LATVIYA, 28 Dec 76).....	23
Pollution Control at Baltic Port Facilities (L. Kazirova; SOVETSKAYA LATVIYA, 4 Jan 77).....	26
Environmental Protection in Donetsk (D. Gridasov; IZVESTIYA, 15 Jan 77).....	28

WESTERN EUROPE

GREECE

Statistics Indicate Athens Air Pollution (I VRADYNI, 8 Jan 77).....	32
--	----

TURKEY

Foreigners Cite Danger of Ankara Air Pollution (HURRIYET, 4 Jan 77).....	33
Ankara Takes Precautions Against Air Pollution (MILLIYET, 6 Jan 77).....	35

JAPAN

JAPANESE FISHERMEN PROTEST RUSSIAN POLLUTING

Tokyo KYODO in English 1217 GMT 21 Jan 77 OW

[Text] Tokyo, Jan 21 KYODO--A group of 50 fishermen from Choshi City, Chiba prefecture, brought a truckload of garbage thrown off Soviet fishing vessels to the Fishery Agency Friday and urged speedy implementation of a 12-mile territorial fishing zone.

The fishermen complained that a large Soviet fleet that recently fished its way south down the Pacific coast of Japan damaged the nets of Japanese fishing boats, reduced the catch of Japanese fishermen, and polluted the ocean with garbage thrown overboard.

The pick-up truck full of discarded cans and other waste was displayed as "evidence" of indiscriminate Russian polluting.

Five representatives of the group appealed to agency director general Makoto Okayasu to prohibit the illegal discarding of garbage, clean up the garbage now floating off the coast, and speed enactment of the 12-mile limit.

Okayasu said that he would lodge a protest with the Soviets through the Foreign Ministry about the pollution of Japanese coastal waters with garbage.

CSO: 5000

EAST GERMANY

WATER SUPPLY FACILITIES, FUTURE REQUIREMENTS OUTLINED

East Berlin BAUERN-ECHO in German 1/2 Jan 77 p 8

[Text] In the law concerning the five-year plan for the development of the national economy of the GDR from 1976 to 1980, the water supply companies have been given the task of providing the population, industry, and agriculture with a steady supply of water for drinking and industrial purposes. The problem is to ensure the economical use of water resources while making, at the same time, the least possible demands upon society, and of using effectively the water supply installations in all areas of the national economy.

By 1980, as the law concerning the five-year plan 1976 to 1980 requires, 500,000 people will be connected to central water supply facilities. The output of the water works, sewage treatment plants, and pipeline networks is to be increased through reconstruction and rationalization. The capacity of the water works is to be raised from 6 to at least 6.8 million cubic meter per day. Sewage treatment plants and water mains are to be enlarged accordingly. Priority will be given to the capital Berlin, Leipzig, and the areas of Karl-Marx-Stadt/Zwickau. For 1977 the national economic plan provides for giving about 100,000 people access to the public drinking water supply network.

By creating new water supply capacities, it was possible to make one-fifth more drinking water available to the population in 1975 than in 1970. More than 7,200 km of new supply pipes were laid during the past five-year plan. As a result, 750,000 persons last year received more drinking water than in 1970 from central water supply resources. The employees working in the preparation plants of the water works see to it that each day 5.8 million cubic meters of drinking water flows into the central network. In a new apartment building the average consumption of water per day amounts to 250 liters per person.

Socialist agriculture has a steadily and rapidly growing need for water. In 1975 over 650,000 hectares of agricultural acreage were already irrigated. For this purpose, 970 million cubic meters of water was needed. A great need for water exists also in the industrial animal production plants. The

hog-raising and -fattening combine Quaschwitz, for example, uses 5,000 cubic meters of water per day. This is the same amount of water as that needed for a city of 500,000 inhabitants.

The law concerning the five-year plan provides for constructing, by 1980, irrigation plants for 520,000 hectares, 32,000 of which are to be irrigated by sprinklers.

The more than 30,000 employees of the water works who take care of about 70,000 km of drinking water pipes, 32,000 km of streams, 3,500 lakes and ponds and 150 dams and reservoirs are making every effort to increase the capacity of the drinking water preparation and supply plants. Besides the projects set down in the plan, additional capacities are being opened up in many places over short-range periods. Some 260 facilities which help to insure adequate water supply were set up, in addition to those provided for in the 1976 National Economic Plan. Their value amounts to M26 million and they are primarily new pipes to wells and springs, the construction of pumping stations, the tapping of brook water, and the laying of new pipes. In the GDR about 100 wells alone were put into service within a short span of time in 1976, 200 km of pipes were laid and winterized in the last few weeks of the year, 10 intermediate pumping stations were built, 15 city sectors and communities were connected to already existing pipes supplied with water from reservoirs.

During the dry spell of 1976 the planned enlargement of the dam system in the GDR proved its value. Billions of marks had been spent by the socialist state to regulate the water supply of entire districts. In times of water surplus dams store water so that it will be available during dry spells.

The directive of the Ninth SED Congress in regard to the five-year plan 1976 to 1980 provides for an enlargement of the damming capacity by an additional 180 million cubic meters. After this task is accomplished, the total capacity of all dams, storage tanks, and reservoirs in the GDR will amount to 1.5 billion cubic meters.

8889

CSO: 5000

EAST GERMANY

INSTITUTE DIRECTOR DISCUSSES STORAGE OF NUCLEAR WASTE

Dresden SAECHSISCHE ZEITUNG in German 15/16 Jan 77 p 6

[Answer to reader's inquiry by Prof Dr Flach, director of Central Institute for Nuclear Research, Dresden]

[Text] [Question] What is the origin of radioactive waste, what happens to nuclear waste produced by nuclear reactors in the GDR?

[Answer] Radioactive waste is produced when nuclear energy is utilized, and these wastes cannot be recycled. The principal producers of radioactive wastes are nuclear power plants and the manufacturers of radioactive substances for use in research, medicine and technology.

Nuclear power plants produce liquid and solid radioactive waste in the shape of concentrates resulting from the processing of leaking, rinsing and decontamination waters as well as plant components contaminated by radioactivity, and air filters. Radioactivity is carried primarily by long persisting fission products such as Cs - 137 and activated corrosion products such as Co - 60. For purposes of cooling the highly active burnt out fuel elements of the reactors are kept in large intermediate storage water tanks for a considerable period and subsequently recovered for recycling.

In the manufacture and use of radioactive substances quite large quantities of liquid and solid radioactive substances are produced, such as remains of process solutions, rinsing agents or contaminated laboratory materials. Radioactive wastes must not be disposed of arbitrarily but collected and stored separate from normal wastes. A specialized state collection service conveys radioactive wastes to their final storage place.

After full consideration of the need for protection from radiation and of socialist environmental control regulations as well as for reasons of economy the most suitable final storage places of radioactive wastes in the GDR were found to be old salt mine workings. Salt formations are particularly suitable for the safe storage of radioactive wastes due to their plasticity under higher pressures. They are subject neither to rents nor fissures and therefore largely impervious to liquids and gases. Owing to the excellent therman conductivity of salt even highly active wastes can be stored. Currently a disused salt mine in Magdeburg Bezirk is being readied as the central final disposal site for radioactive wastes.

EAST GERMANY

BRIEFS

WATER SUPPLY INCREASES--The output of the water works in our republic is expected to increase to at least 6.8 million cubic meters per day by 1980; this will come about mainly through reconstruction work and rationalization. This amount is 1 million cubic meters more than at present. In [East] Berlin, for example, the capacity of the Friedrichshagen Water Works will more than double. This will also create the necessary conditions for supplying by 1980 adequate amounts of good quality drinking water to the approximately 20,000 families in the ninth city district. [Text] [East Berlin BAUZEITUNG in German Jan 77 p 3]

CSO: 5000

YUGOSLAVIA

CONFERENCE ON ENVIRONMENTAL PROTECTION HELD IN MONTENEGRO

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 15 Dec 76 p 11

[Text] The natural environment of Montenegro, as a result of its underdevelopment and impenetrability--as noted by one of its guardians, Dr Mihailo Vuckovic, Director of the Institute for Environmental Protection of Montenegro--was until recently protected in itself. However, the ever increasing and stronger influence of man as an anthropogenic factor has disrupted its beauty and the purity of its regions. For this reason the Academy of Sciences and Arts of Montenegro devoted its first scientific meeting to problems of protecting and improving the environment in Montenegro.

Recently in Herceg-Novi over a hundred Montenegrin academicians, scientists and researchers closely examined the present state of all components of the environment in Montenegro and agreed upon measures which should be taken in order to stop the ongoing processes of air, water and soil pollution.

Montenegrin Coast Increasingly Polluted

In this meeting a concern was expressed for the fate of the Montenegrin coast and the quality of the water in this part of the Adriatic sea. Researchers have already discovered significant concentrations of pesticides and some heavy metals in the organisms of fish and mollusks. Definite indications demonstrate that nature itself, helped by sea currents, has "imported" these pollutants from the Mediterranean and the Ionic sea into the waters of the Southern Adriatic.

Examining samples of sea-water around Ulcinj, Bar, Budva and Kotor, Prof Dr Radojica Kljajic established the existence of considerable concentrations of regular pesticides. Thus, residues of DDT, lyndan and other pesticides have been discovered in all of the analyzed water-samples, the highest concentration, however, being in the area of Ulcinj. It was emphasised that the established quantities of pesticides represent a potential danger resulting from their inclusion in the "food chain." Professor Kljajic's research group presently confirmed its findings by examining residues of regular pesticides in the fish in the Southern Adriatic and

and the surface waters of Montenegro. Among 10 well-known types of fish, such as sardelle, picarel, surmullet, carp, eel and others, there were none in which, in a larger or smaller quantity, residues of pesticides and their degrading products were not discovered. Pollution by individual compounds, such as hexachlorine, lyndan and DDT, frequently exceeded tolerance limits.

Increasing Number of Dead Fish in Lake Skadar

These results become particularly disturbing if at the same time we remember the prophetic words of Professor Picard, consultant to the United Nations on problems of the marine environment, who at one time stated that after the Baltic, the Adriatic is the most imperiled sea and is endangered with the extinction of its biological life unless adequate measures are taken immediately. When Professor Picard made this statement he had in mind the fact that the Adriatic is a closed sea and that it represents one of the larger gulfs of the Mediterranean.

The case is the same with the rivers and lakes in Montenegro, whose shores have registered over 30 larger and smaller pollutants. Refuse waters from coastal industries and the increasingly widespread use of chemicals in agriculture have resulted in rapid changes in the quality of fresh waters. An interesting example of such changes is provided by Lake Skadar, the largest natural fresh-water fishing site in the Balkans. Lake Skadar is day after day exposed to the damaging effects of waste materials from the industry erected along its tributaries, refuse waters from households and water from agricultural lands as well as other forms of pollution. The consequences of pollution from some industrial plants in the confluence of the Moraca are wholesale suffering of the fish in the lake or their poisoning to the extent that they become useless for human consumption.

Aluminum Industry Affects the Purity of the Air

The rapid development of the aluminum industry in this republic also has a negative effect on the environment, particularly on the air. The waste gases of electrolytic plants contain considerable concentrations of fluorine. The effect of fluorine compounds is felt especially in the surroundings of the Aluminum Combine in Titograd.

These examples of rapid industrial development, which was not attended by a concern for the environment, has inspired scientists and researchers in the Academy of Sciences and Arts of Montenegro to devote more attention to new projects so that new industrial plants will not be constructed prior to protecting the environment from all possible consequences of their technological processes.

8989

CSO: 5000

POLLUTION DATA ON MONTENEGRIN COASTAL WATERS

Belgrade GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA in Serbo-Croatian No 12, Dec 76 pp 31-33

[Article* by I. Elezovic, R. Kljajic and C. Gojnic: "Persistent Pesticides as Pollutants of the Adriatic Sea Off the Coast of Montenegro"]

[Text] The problem of the Adriatic Sea's water quality and its protection against pollution has become a matter of interest and to some extent even of concern, not only for scientists and specialists, but even for our public in the broadest sense. As a part of the Mediterranean it is subject to the runoff of enormous amounts of surface water which is polluted to a greater or lesser extent with a very great variety of chemical compounds.

Although the potential hazards of these compounds vary, the fact that they reach streams and the sea cannot be underestimated. And this particularly applies to compounds which are toxic and very persistent.

The pesticides belonging to the group of halogen derivatives of hydrocarbons, which in the postwar period have been used on a very large scale in farming, forestry, animal husbandry, industry and municipal sanitation, are precisely such compounds. Numerous researchers [1-5] have indicated their presence in water and their accumulation in fish and other aquatic organisms.

Since interest has been expressed not only in the present level of pollution in the Adriatic, but also in the possibilities for the sea's long-term use by future generations, it has become an imperative to introduce conservation and careful management throughout the entire region of the Adriatic and the Mediterranean seas. This is undoubtedly one of the principal tasks of the present generation.

* Delivered as a paper in the symposium entitled "State of, Protection and Improvement of the Environment in Montenegro" sponsored by the Montenegrin Academy of Sciences and Arts and held in Herceg-Novi 6-8 October 1976.

However, if present generations are to make their contribution to protection against pollution, they must carry out their activities in all fields on the basis of solutions which have been scientifically verified. Such an undertaking could be effectively carried out through the closest international division and organization of labor.

Within the context of the problem we have posed, it was our desire in the last 5 years to make a definite contribution, on the one hand by determining the level and extent of water pollution of the southern Adriatic, and on the other, by committing an institution in Montenegro which has the necessary personnel and equipment to participate in this interdisciplinary research, which is not only interrepublic, but indeed international.

Material and Methods

Between January 1971 and December 1975 a study was conducted of the pollution of the seawater of the southern Adriatic at four localities: Kotor, Budva, Bar and Ulcinj. Within each locality water samples were taken at three different sites, four times a year.

One-liter water samples were taken from the surface portion.

Residues of the following chlorinated hydrocarbons:

Lindane: the gamma isomer of 1,2,3,4,5,6-hexachlorocyclohexane

DDT: 1,1,1-trichloro--2,2-bis (p-chlorophenyl) ethane

DDE: 1,1-dichloro--2,2-bis (p-chlorophenyl) ethylene

DDD: 1,1-dichloro--2,2-bis (p-chlorophenyl) ethane

Heptachlor: 1,4,5,6,7,8,8-heptachloro--3a,4,7,7a-tetrahydro--4,7-methanoindene

Aldrin: 1,2,3,4,10,10-hexachloro--1,4,4a,5,8,8a-hexahydro--1,4-endoexo--5,8-dimethanonaphthalene

Dieldrin: 1,2,3,4,10,10-hexachloro--6,7-epoxy--1,4,4a,5,6,7,8,8a-octahydro--1,4-endoexo--5,8-dimethanonaphthalene

Endrin: 1,2,3,4,10,10-hexachloro--6,7-epoxy--1,4,4a,5,6,7,8,8a-octahydro--exo--1,4-exo--5,8-dimethanonaphthalene

The pesticides were extracted from the water samples and cleaned by a modified version of the method used by Greve [6] and Kadoum [7]. The effectiveness of extraction was about 90 percent referred to distilled water.

Water samples of 500 milliliters were extracted with petroleum ether (40-70°) without prior filtration. The samples were cleaned on microcolumns packed with silica gel and florisil and eluted with benzene. Gas-liquid chromatography [8] on a Varisen 1400 instrument with an electron capture detector was used for quantitative and qualitative determination of pesticide residues.

Results and Discussion

In the absence of our own criteria for assessment of the level of pollution of the water analyzed, we used foreign criteria [9] with the values shown in Table 1.

Table 1

<u>Pesticide</u>	(In micrograms/liter)		
	<u>48-hr LC-50</u>	<u>S 1/50</u>	<u>S 1/100</u>
Aldrin	0.04	0.0008	0.0004
Lindane	0.20	0.0040	0.0020
Dieldrin	3.30	0.0060	0.0030
Heptachlor	0.20	0.0040	0.0020
Endrin	0.20	0.0040	0.0020
DDT	0.60	0.0120	0.0060

Definitions are as follows:

LC-50 lethal concentration of pesticide pollutants which in 48 hours kills 50 percent of the individuals of the aquatic population studied;

S 1/50 a safety criterion representing one-fiftieth of the LC-50;

S 1/100 a safety criterion representing one-hundredth of the LC-50.

Table 2 and Graph 1 summarize the data over the 5-year period so as to give a better survey.

DDT-DDD-DDE were detected in all the samples analyzed from a minimum of traces to 0.049 microgram/liter. The highest average annual content (0.021 microgram/liter) was ascertained at the locality of Ulcinj in 1971.

The average annual amounts which were determined are considerably below the LC-50, but above the S 1/50 and considerably above the S 1/100.

Lindane was also detected in all the samples analyzed from the minimum of traces to 0.081 microgram/liter. The highest average annual content (0.060 microgram/liter) was determined at Ulcinj in 1971.

Table 2. Residues of Persistent Pesticides in the Waters of the Southern Adriatic in the 1971-1975 Period (in micrograms/liter)

Local- ity	DDT + DDE + DDD			Heptachlor and Hepoxide		
	Average Annual Content	min. — max.	Average Annual Content	min. — max.	Average Annual Content	min. — max.
1971.						
Kotor	0,012	<0,01—0,031	0,054	<0,01—0,065	0,018	<0,01—0,038
Budva	0,017	<0,01—0,039	0,043	<0,01—0,054	0,017	<0,01—0,031
Bar	0,014	<0,01—0,037	0,047	<0,01—0,059	0,021	<0,01—0,042
Ulcinj	0,021	<0,01—0,049	0,060	<0,01—0,081	0,024	<0,01—0,047
1972.						
Kotor	0,011	<0,01—0,028	0,052	<0,01—0,064	0,017	<0,01—0,034
Budva	0,018	<0,01—0,042	0,042	<0,01—0,056	0,017	<0,01—0,036
Bar	0,015	<0,01—0,036	0,044	<0,01—0,052	0,020	<0,01—0,041
Ulcinj	0,020	<0,01—0,045	0,058	<0,01—0,077	0,022	<0,01—0,048
1973.						
Kotor	0,011	<0,01—0,024	0,051	<0,01—0,060	0,017	<0,01—0,032
Budva	0,016	<0,01—0,031	0,041	<0,01—0,054	0,016	<0,01—0,037
Bar	0,014	<0,01—0,026	0,044	<0,01—0,055	0,018	<0,01—0,039
Ulcinj	0,019	<0,01—0,036	0,056	<0,01—0,072	0,021	<0,01—0,042
1974.						
Kotor	0,010	<0,01—0,021	0,049	<0,01—0,057	0,013	<0,01—0,029
Budva	0,015	<0,01—0,028	0,039	<0,01—0,051	0,014	<0,01—0,035
Bar	0,012	<0,01—0,027	0,041	<0,01—0,052	0,017	<0,01—0,036
Ulcinj	0,019	<0,01—0,032	0,055	<0,01—0,069	0,020	<0,01—0,041
1975.						
Kotor	0,010	<0,01—0,022	0,047	<0,01—0,055	0,014	<0,01—0,031
Budva	0,015	<0,01—0,028	0,036	<0,01—0,050	0,014	<0,01—0,033
Bar	0,012	<0,01—0,024	0,041	<0,01—0,044	0,016	<0,01—0,038
Ulcinj	0,018	<0,01—0,033	0,053	<0,01—0,072	0,019	<0,01—0,040

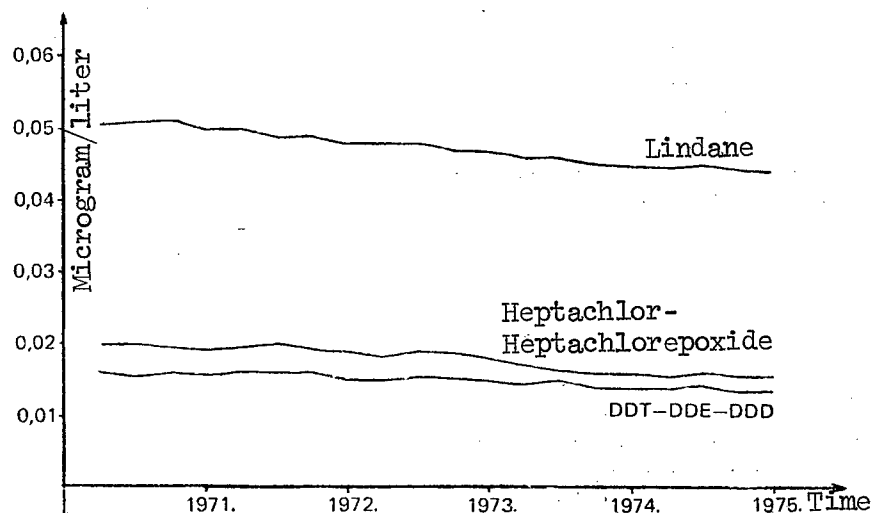
The average annual amounts which were determined are considerably below the LC-50, but above the S 1/50 and considerably above the S 1/100.

Heptachlor-hepoxide were also detected in all the samples analyzed from the minimum of traces to 0.048 microgram/liter. The highest average annual content (0.024 microgram/liter) was also ascertained in 1971 at Ulcinj.

The average annual amounts which were determined are considerably below the LC-50, but above the S 1/50 and considerably above the S 1/100.

Aldrin-diieldrin and endrin were detected only in certain samples, and even then in traces.

Graph 1. Residues of Persistent Pesticides in the Waters of the Southern Adriatic (January 1971-December 1975), in micrograms/liter



A tendency toward a mild reduction of amounts (Graph 1) was ascertained for DDT-DDD-DDE, lindane and heptachlor-hepoxyde because of restrictions put on their massive use both in Yugoslavia and in the world during recent years.

Since the results of the study could depend essentially on the manner in which samples are prepared for analysis, we need to point out that our results pertain to unfiltered water.

That is, the pesticide residues found in natural water may differ from residues found in the same water following filtration. Bevenue et al. [10] gave the following ratios between pesticides in water and other components of the same biotope, unity being assigned to the value for water:

Water	1
Algae	4,300
Sediment (undried sample)	9,000
Small fishes (guppies and mollies)	27,000
Carnivorous fishes	33,000
Fishes which feed on detritus	36,000

This must be borne in mind not only concerning the results presented in this paper, but also concerning our work in studying accumulation of pesticides in fishes of the southern Adriatic [11]. This explains the occurrence of very great differences in the level of water pollution and contamination of fish directly connected by the complex system of the food chain.

For that reason this research should be continued and expanded to include other persistent pollutants and to cover other components of the biotope as well.

Conclusion

On the basis of results of 5-year testing (1971-1975) of persistent pesticides polluting the water of the southern Adriatic at four localities (Kotor, Budva, Bar and Ulcinj), we can draw the following conclusions:

- i. DDT and its derivatives DDD and DDE, lindane and heptachlor-h. epoxy. d were always present in traces at these localities;
- ii. Pollution by these compounds was most pronounced at the locality of Ulcinj;
- iii. Aldrin-dieldrin and endrin were detected only in certain samples and then in traces;
- iv. The amounts of residues found for DDT-DDE-DDD, lindane and heptachlor-h. epoxy. d are considerably below the LC-50, but also above the concentrations indicated as S 1/50 and S 1/100.

The amounts of these compounds are tending to decrease gradually because of restrictions placed on their massive use both in Yugoslavia and in the world during recent years.

BIBLIOGRAPHY

1. Bevenue, A., et al., "Organochlorine Pollutants of the Marine Environments of Hawaii," American Chemical Society, Division Water Air Waste Chemistry, General Papers, Vol 11, No 2, 1971.
2. Picer, M., "Persistent Organic Pollutants," Conference on Protection of the Adriatic, Opatija, 1974.
3. "Materials From the UN Conference on the Human Environment," Stockholm, 1972.
4. Kljajic, R., "Necessity of Synchronized Programming of the Use of Pesticides in Order to Minimize Contamination," HRANA I ISHRANA, Vol XI, No 1-2, 1970, pp 5-11.
5. Kljajic, R., Elezovic, I., and Zivkovic, Branka, "Pollution of the Danube-Tisa-Danube Hydrosystem and Streams in Vojvodina With Residues of Pesticides and Related Toxic Agents," GLASNIK POLJOPRIVREDNE PROIZVODNJE, PRERADE I PLASMANA, No 3, 1976, pp 1-20.

6. Greve, P. A., "Potentially Hazardous Substances in Surface Waters. I. Pesticides in the River Rhine," SCI. TOT. ENV., No 1, 1972, pp 173-180.
7. Kadoum, A. M., "A Rapid Micromethod of Sample Clean Up for Chromatographic Analysis of Insecticidal Residues in Plant, Soil and Surface and Groundwater Extracts," BULL. ENVIRON. CONTAM. TOXICOL., No 2, 1967, pp 264-273.
8. "Methods for Organic Pesticides in Water and Waste Water," EPA, Nat. Environ. Research Center, Cincinnati, Ohio, 1971.
9. "Water Quality Criteria," FWPCA, U.S. Department of the Interior, Washington, 1968.
10. Bevenue et al., "Organochlorine Pesticide Residues in Water, Sediment, Algae and Fish, Hawaii, 1970-71. Pesticides in Water," EPA, PESTICIDES MONITORING JOURNAL, Vol 6, No 1, 1972.
11. Kljajic, R., et al., "Residues of Persistent Pesticides in the Fishes of the Southern Adriatic and Surface Waters in Montenegro," paper delivered at symposium entitled "Status of, Protection and Improvement of the Environment in Montenegro," Herceg-Novi, 1976.

7045

CSO: 5000

WATER PURIFICATION TECHNIQUES LISTED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Sep 76 p 4

[Article: "An Ocean in the Pipes"]

[Text] "How much water do you think our people use in a day? Today on the average we daily use more than 50 million cubic meters. And this is just from our water supply systems. This doesn't account for wells and other bodies of water," says S. A. Shubert, doctor of engineering sciences and director of the Scientific Research Institute for Municipal Water Supply and Water purification of the Academy of Municipal Services imeni K. D. Pamfilov. "In the coming years we'll have to increase the daily water supply by about two times. On the whole for the country this will amount to more than 100 million cubic meters....

"But what is causing this? After all, the population has not doubled?

"But then housing construction is moving at a rapid pace. Cities, villages and towns are well-built. But what does this indicate? When a man carries water from a well he uses every liter carefully. But as soon as a water faucet appears in his home his requirements grow at a minimum of ten times. And this is the rule. Moreover, new water-consuming devices have appeared in various places--air conditioners. In the most economic of these, water is used as a coolant. Visitors to the Bol'shoy Theater in the capital probably do not even suspect that the comfort in the hall is helped in being provided by cold water from a specially punched deep well alongside....

"For every inhabitant of a city, say, like Moscow, about 500-600 liters of water daily must be supplied," continues S.A. Shubert. "It is true that an individual used to city comfort requires only a third of that amount for his daily needs. The remaining two-thirds are taken by enterprises serving him--cafeterias, bakeries, laundries and even photography shops which also need fresh water. But the concern is not only with the volume of water but also its quality...."

The dictionary for those used to municipal services has practically lost the concept of "natural fresh water." These people feel that it just exists on

the glacial caps of mountains. In regards to reservoirs, they are polluted to one degree or another by municipal or industrial sewage. Therefore, plans for the near future contemplate that two-thirds of the water for municipal needs are to come from underground sources. What of the remaining third? Then, just as now, it will have to be purified. And this must be done with maximum care.

If only what is done today at modern water supply stations is not done! Chlorine is added to oxidize organic impurities. Substances are added, coagulants, so that they can be transformed into residue in massive sedimentation tanks. The water then passes through filters and again chlorinated, sparingly measuring off doses of oxidizing agents. A surplus of chlorine in water can cause stomach ailments. But even all these procedures sometimes seem small.

"The essence of all these methods amounts to the fact that we are only rendering the contaminants harmless, only forcing them to fall into the residue," says S. A. Shubert. "But when the water has to be taken from polluted reservoirs, the task becomes tougher. The harmful contaminants must be removed. How? As it turns out there is a method well known to all of us based on the gas mask. It is activated carbon. On the basis of granulated activated carbon we developed and are already using this efficient technology in water purification...."

But purifying water is a small matter. It must have an esthetically pleasing appearance. Why consider esthetics? It seems that medical personnel feel that the most harmless and even tasty water having an unattractive appearance might be a reason for complications. The fact is that the human organism requires 2.5-3 liters of water daily for normal living activities. If water looks unappealing man will attempt to drink less. And at the same time he will be submitting his body to so-called hunger rations.

Of all these considerations we cannot fail to pay attention to such a new water purification method as ozonization. Ozone, an oxidizing agent, has superior traditional chlorine activity. Therefore, it is capable of decontaminating even the most "lively" organic impurities and at the same time more intensely making water colorless. Passing through an ozonization device, water becomes blue, as if from the basin of a mountain lake. The western station of the Moscow water supply system, in particular, has now been outfitted with such equipment.

"Nevertheless, the use of some fresh water will not resolve the problem," says S. A. Shubert. "We must economize water simultaneously." We must cleanse our waste water and respond to technical needs. At one of the world's mightiest automated complexes, the Novo-Kur'yanovskaya aeration station near Moscow, this is already being done. At the aeration station serving Orekhovo-Zuyevo, municipal sewage is not only purified, but the resultant residue is transformed into valuable organo-mineral fertilizer. The technical facilities for purging laundry sewage water containing synthetic washed out substances have been set up and are operating successfully. This not only allows for an

approximate 10 percent savings in water but returns up to 25 percent of the washed out substances for repeated use. But what is most important is that all these measures make it possible to protect our reservoirs from further pollution....

8504

CSO: 5000

SOVIET-FINNISH COMMISSION ON ENVIRONMENTAL PROTECTION MEETS

Tallin SOVETSKAYA ESTONIYA in Russian 7 Jan 77 p 3

[Article by Nikolay Kotlyarov: "An Area of Cooperation -- The Protection of Nature"]

[Text] The regular session of the Joint Soviet-Finnish Commission on the Use of Joint Boundary Water Systems was held in the middle of December last year. At it were examined a number of questions directly related to the most important area of human activity -- environmental protection.

The cooperation of many years between Soviet and Finnish organizations in the area of environmental protection and the rational utilization of joint boundary water systems -- is one of the brightest examples of active and effective interaction between our countries.

Much attention is given, in particular, to the regulation of the water system in Lake Saimaa. This is completely explainable. The water resources of the Vuoksa River, which flows out of Lake Saimaa, are utilized for the operation of two Finnish and two Soviet hydroelectric stations and also for the needs of other sectors of the economy. The problem of reducing unused or idle throw-offs of water passing through the cascade of the hydroelectric stations during periods of abundant water and providing for the maximum effective utilization of the water resources of the lake by both countries is of considerable importance here.

The decision was adopted at the session to continue the further joint study of the question of regulating the level of Lake Saimaa. This research is aimed at the optimum and overall utilization of the Vuoksa River basin in the interests of both countries.

The participants at the session noted with satisfaction the successful accomplishment of measures for strengthening the protection of joint boundary water systems against pollution. These measures were carried out in the Soviet Union as well as in Finland. Thus, at the Svetogorsk Cellulose-Paper Combine in the USSR construction was completed on equipment for the complete biological purification of sewage. A significant portion of the

work was accomplished here by the Finnish firm Finnstroy in accordance with a contract. The hydrochemical composition of the Vuoksa River was improved after the purification equipment was put into operation. The content of suspended matter and petroleum products, in particular, was drastically reduced, and the oxygen system of the river was improved.

The construction of equipment for the chemical-mechanical purification of sewage is being accomplished at the Kamenogorsk Paper Factory. In the Finnish city of Lappeenranta work is continuing on the construction of receptacles for the collection of all city sewage and for its transfer to a purification plant.

At a discussion of the activities of the work group on fisheries the participants at the session noted that Soviet and Finnish organizations have performed considerable work on increasing the productivity of fish in joint boundary water systems. In the last 5 years alone approximately 500,000 young fish of various ages from several valuable species were planted in the basic water systems.

As a result of the constant interaction of Soviet and Finnish experts on fishery joint boundary water systems more prospective from the point of view of fisheries have been defined. Basic measures for improving fish productivity in them for the years 1976-1980 were agreed upon at the session. This in essence is the first long-term plan of cooperation between Soviet and Finnish organizations for increasing the reproduction of fish in the water basins.

The organization of timber-rafting occupies an important place in the rational utilization of joint boundary water systems. The commission noted that timber-rafting in 1975 and 1976 was conducted in complete compliance with the established rules for floating timber along the water system of the Soviet-Finnish border. As a result of joint efforts all timber-rafting operations were conducted in an organized manner. The plan was fulfilled both with regard to volume as well as time limits. Sunken wood was raised and removed. The commission expressed its gratitude to the representatives of the boundary authorities and to the boundary commissioners of both countries for their successful work.

10576

CSO: 5000

SHORTAGE OF SEWAGE TREATMENT FACILITIES CITED

Moscow EKONOMICHESKAYA GAZETA in Russian No 49, Dec 76 p 17

[Article by K. Sharonov, chief of the Main Administration for Ensuring the Supply of Livestock-Raising Complexes and Poultry Farms [Soyuzglavzhivotnovod-komplekt] of the USSR State Committee for Material and Technical Supply [Goss-nab]: "At the Complex and On Time--On Acceleration of the Construction of Sewage Treatment Plants in Cities and the Delivery of Equipment for Them"]

[Text] In his fiscal address to the 25th Party congress, the CC CPSU general secretary, Comrade L. I. Brezhnev said, "...in proportion to the development of the national economy and the growth of cities and industrial centers, more and more funds will be required for environmental protection. For the present five-year plan 11 billion rubles have been set aside for this purpose. And this amount will increase."

Much has been done in recent years to protect water resources and to multiply their riches. Industrial technology has improved at many industrial enterprises resulting in decreased discarded sewage. Circulating water supply systems have been widely introduced leading to a savings of 10 billion cubic meters of water annually in the branches of industry.

Our country has established the world's strictest standards for maximum permissible concentrations of harmful substances discharged into the environment. And so, the USSR has in action standards for 500 substances disposed of in bodies of water. Therefore, considerable funds are being spent on building sewage treatment plants. And, we shall see, this is not only at industrial enterprises.

Important party and governmental decrees have been adopted in recent years calling for the building of complex and efficient facilities to purify municipal sewage water in many cities and major industrial areas. These include Leningrad, Gor'kiy, Kuybyshev, Kazan', Orenburg, Izhevsk and others. Gossnab USSR has been entrusted with ensuring the equipment, devices, cable and other articles for these most important sewage treatment facilities now being built.

Soyuzglavzhivotnovodkomplekt been assigned the task of equipping the sewage treatment plants now being built in the cities. We have been conducting this work since 1972 when the CC CPSU and the USSR Council of Ministers adopted the decree "On measures to prevent pollution of the river basins of the Volga and Ural by raw sewage water." At present our main administration is providing the equipment, devices, cable and other articles to sewage treatment plants being built in 184 cities situated in the river basins of the Volga and Ural, the Black, Azov and Baltic seas, including 64 cities in the RSFSR, 58 in the Ukraine, 20 in Belorussia, as well as in cities of Moldavia, Latvia and Estonia.

For the years 1972-75 sewage treatment plants were outfitted and became operational having an overall capacity of about five million cubic meters of sewage water daily (mechanical and biological purification). Also 430 km of collectors were equipped and activated. Besides this, 42 pumping transfer stations with an overall capacity also of about five million cubic meters of water daily were put into operation.

But nevertheless it is necessary to note that the established tasks to put projects into operation were not carried out completely. Soyuzglavzhivotnovodkomplekt guaranteed delivery of equipment in full, however, due to unsatisfactory construction and installation work, especially in such cities as Tula, Ivanovo, Vladimir, Rybinsk, and in a number of other cities, installation was not completed. As a result, capacities at work projects having great significance to the state did not become operational.

In the process of providing the sewage treatment plant equipment a number of questions arose whose successful resolution depends on timely activation of these capacities. For example, it is well known that in outfitting these municipal construction projects there is a schedule which is determined by Gosstnab USSR jointly with the councils of ministers of the union republics and the USSR ministries and departments. The inclusion of a construction project on this list presumes the presence of corresponding planning documentation and financing.

In accordance with the decree of the CC CPSU and the USSR Council of Ministers on measures to prevent contamination of the basins of the Black Sea and the Sea of Azov, sewage treatment plants must be built in 107 cities. Meanwhile, the councils of ministers of the union republics included in a corresponding schedule only 70 cities. And in defense of the requisitions for receipt of equipment, representatives from only 45 construction projects came to our main administration. Representatives failed to arrive from the construction projects of Cherkessk, Nikolayev, Kamenets-Podol'sk, Belogorsk, Izyum, Kadiyevka and other cities. They were missing the approved technical documentation.

Furthermore, upon examination of the technical documentation it was revealed that state planning committees of the republics, in planning their capital investments, often violate the established standards for construction schedules.

And so, sewage treatment plants having a capacity of up to 40,000 cubic meters of sewage water daily, according to approved standards, must be built in 2-2.5 years. In fact, construction of many is dragged out over a period of 5-8 years. Under such circumstances material and technical supply to construction projects is difficult and the equipment that has been delivered to them sits idle for lengthy periods.

In several of the union republics, for example, in Belorussia, Estonia, Lithuania and in a number of other republics, the municipal organs were unprepared for timely realization of the special decree of the USSR Council of Ministers on measures for intensified protection of water basins from pollution. Here it was necessary to provide complete equipment of sewage treatment plants in 43 cities. Unfortunately, this problem did not seem possible to resolve next year because for none of the construction projects were title lists, planning and technical documentation, and other necessary documentation presented.

Serious alarm is being caused by the weak organization for production of special equipment for sewage treatment plants. And so, despite the need for sludge scrubbers with a diameter of 54 meters, there is no series production. The production of various types of centrifuges and vacuum filters has been extremely limited. Manufacture of turbo-superchargers is insufficient. The Ministry of Chemical Machine Building has not mastered the production of devices for draining sludge. The technological equipment for sewage treatment plants (sluice gates, scrubber mechanisms and others) produced by the plants of the republics' ministries of the municipal economy was not distributed in a centralized manner.

The problem of equipment shortage for the cities' sewage treatment plants is not new. As long ago as 1972 a special decree on increased protection of nature and improved utilization of natural resources was adopted. It placed tasks before a number of ministries to produce new types of equipment for sewage treatment plants. The Ministry of Chemical Machine Building was especially obligated by such tasks. Its enterprises did not master production of mechanical aerators, scroll centrifuges, special sewage system pumps and other equipment.

The "Basic Trends in the Development of Our Economy in the Tenth Five-Year Plan" indicate that "(we must) develop specialized production for outputting equipment, articles and materials necessary for establishing and putting into operation highly effective sewage treatment plants at enterprises and in cities." To successfully resolve this task, I think that it is necessary to include in the production plans of the machine building ministries the manufacture of technological equipment designated for sewage treatment facilities. Also necessary is the approval of a schedule of non-standard equipment for sewage treatment plants. These facilities must be provided with rolled metal in a centralized manner.

8504
CSO: 5000

STANDARDS FOR ENVIRONMENTAL PROTECTION IN LATVIA DESCRIBED

Riga SOVETSKAYA LATVIYA in Russian 28 Dec 76 p 6

[Article by L. Terekhova: "Preserving a Clean Sky..."; passages enclosed in slantlines printed in boldface]

[Text] The USSR code of All-Union State Standards [GOST], containing thousands of GOST now in force, will be supplemented beginning 1 January 1977 by still three more state standards--the very first in our country for the now developing system of standards for the environment. The establishment of such a system is a practical concrete step on the path towards fulfilling a complex of important tasks decreed by the 25th CPSU Congress in the field of environmental protection.

Included in the standards coming into force are norms for protection of the atmosphere. What they amount to today in our republic, how control for air purity is to be exercised and other questions from our correspondent are answered by //N. Ye. Zakharchenko, chief of the Administration of the Hydrometeorological Service of the Latvian SSR.//

"Our service," he said, "has been assigned the task of maintaining observation and control over the purity of the natural environment. The Soviet Union long ago established maximum standards for the content of harmful substances in the atmosphere. Now GOST will stand guard over air purity because their standards are the strictest in the world."

Latvia has already set up more than 20 control points to monitor the condition of the air. Among them are both stationary and mobile points equipped with portable laboratories. Observation has been set up not only for the air over the capital but for such major industrial centers as Daugavpils, Ventspils, Yekabpils and Valmiyera. The air of the resort city of Yurmala is under special observation. Based on the regular observations of the control points it is possible to say with confidence that Latvia's air condition is favorable and in many regions the air purity is significantly surpassing the established standards.

However there are no grounds for complacency. Our republic has certain localities where the problem of clean air requires urgent and decisive measures.

In "Basic Trends in the Development of the National Economy for 1976-1980," it is written that (we must) "Develop new means and methods in the struggle with harmful substances discharged into the atmosphere." To the accomplishment of this important task of the Tenth Five-Year Plan, many measures have been submitted determined by the "Complex program for natural protection and efficient utilization of the natural resources of the Latvian SSR for 1976-1980." To carry this out capital investments of 700 million rubles have been allocated.

A section of this program--"Protection of the air basin"--is already operational. It includes such measures as the construction of gas and dust trapping installations at enterprises of the Latvian SSR Ministry of Procurement with an overall capacity of 2,500 cubic meters of gas per hour. Gas trapping installations are becoming operational at the Riga Chemical Machine Building Plant, Rigakhimash, with a capacity of more than 200,000 cubic meters of gas per hour, and at the Yelgava Machine Building Plant with a capacity of 80,000 cubic meters.

// "Contamination of the atmosphere often leads to pollution of the soil and natural sources of water. Therefore, the struggle for a clean air should be examined in a complex with other natural protection measures. Which of these interdependent aspects have to be set aside as especially important? //

"In reality the discharge of harmful gases is spread by the wind for many kilometers and is capable not only of bringing harm to plant life, but also to soil, bodies of water and even to ground water. In registered instances the soot of England reached as far as Scandinavia. By studying the seriousness of such kinds of environmental contamination, Latvia in 1979 plans to put a proving grounds into operation intended not only to decontaminate and destroy industrial by-products, but to make them suitable for further economic use. And so, while at present a major portion of the by-products of the woodworking industry are still burned, in the future plans call for reprocessing them to derive specific types of raw material.

// "Protection of the atmosphere and the introduction of GOST in our country are obligatory practically for all branches of the national economy. Today to what degree do they participate in resolving this problem? //

"Very decisive measures are being adopted. And so, plans call for removal of the asphalt and concrete industry situated on Ulitsa Dzirtsyema beyond the city limits of Riga. At the same time the air for the populated area of Il'gyumtsiyems will become clearer. The same fate is anticipated for the Riga Cement and Slate Plant if decisive measures for efficient dust trapping are not adopted there in the near future.

Our republic annually puts into operation several dozen sewage treatment plants for industrial waste products--like the so-called cyclone dust-extractors, electrofilters, gas traps, etc. In addition, industrial interests are to be especially taken into account. After all, the sewage treatment plants capture much valuable raw material, suitable for further use. For example, several gas purification devices thanks to this pay for themselves after six months to two years.

The intensity of motor vehicle transportation in Riga grows every year. The amount of exhaust fumes also increase. This is why when planning the building of new roads and bridges environmental protection questions are also considered. With this aim the amount of traffic along the streets of Old Riga has been significantly reduced. The island bridge relieved the center of the city from the flow of truck traffic. Still two more bridges are planned to be built across Daugava in the future.

All these plans and measures are intended to make the air we breathe even cleaner.

8504

GSO: 5000

POLLUTION CONTROL AT BALTIC PORT FACILITIES

Riga SOVETSKAYA LATVIYA in Russian 4 Jan 77 p 2

[Article by L. Kazirova, chief of the Liyepayskaya Gosvodinspektsiya [State Water Inspectorate]: "The Sea Will Be Clean"]

[Text] Last year the Soviet government adopted the decree "On measures to intensify conservation of the basin of the Baltic Sea." In accordance with this, all ministries and departments are obligated to carry out a complex of measures to guarantee complete cessation by 1985 of dumping impure industrial, municipal and domestic sewage into rivers and other bodies of water of the Baltic Sea basin.

Two port cities, Liyepaya and Ventspils, are in the zone of operations of our state water inspection office. Much has been done here recently to prevent contamination of the sea by petroleum and sewage water. And so, in Liyepaya the first stage in the building of overall municipal sewage treatment facilities has been completed. A significant portion of the city's sewage already passes through them. Acquired by various departments and in operation are four petroleum refuse collectors and two barges for gathering oil-bearing water (one of them is a floating sewage treatment plant). Many large-capacity ships have set up their own purification equipment. Due to the efforts of a base of the ocean fishing fleet organization, Okeanrybflot, 100 linear meters of boom defense have been produced. Another 500 meters of such harbor booms have been purchased and will soon be set up.

Ventspils has received another barge to collect the bilge water from ships of the merchant and fishing fleets and has acquired some booms for localizing spilled petroleum products. Two petroleum refuse collectors are at work at the port's surface water area. Shore sewage treatment plants have expanded. The cleansing of ballast water from petroleum products is stable and completely satisfactory. On the whole, the contamination of the surface water areas of both ports by petroleum products and other substances has been significantly reduced.

At the same time there are still shortcomings in this matter. In Liyepaya, for example, the petroleum refuse collectors work irregularly. The barge

belonging to the base of Okeanrybflot, a floating sewage treatment plant, is in poor working order. It is time to replace it with a new one. Due to insufficient numbers of boom defenses it is not always possible to localize and quickly gather up oil spillages. Petroleum waste products from oil-burning boilers as well as from motor vehicle transport and from various organizations still pass through the municipal sewage system into local water sources.

In this regard Ventspils also has many deficiencies. The absence of a sufficient number of boom defenses in the water surface area of the port does not always allow for localizing oil spills and gathering them with the two petroleum residue collectors.

Although the Ventspils fishing port received boom defenses, they have still not been completely set up. Several years ago a special pier was built for accepting fecal discharges from ships, but as yet it has not been properly readied for collection purposes. The required laboratory control over the work of separators set up on cargo and fishing ships has still not been done, despite the fact that this is a simple matter.

From what has been said it is apparent that to accomplish the water conservation measures outlined in the 10 Five-Year Plan much work has yet to be done. This includes not only achieving clean surface water areas at the ports but also inserting all sewage from all municipal projects into the over-all city sewage treatment plants. We have to build biological purification facilities for the cities and set up local sewage treatment plants for various industrial enterprises.

The most serious attention must be given to the intensification of education among the ships' crews and training work collectives at shore facilities and industrial enterprises because, in the final analysis, prevention of accidents like oil spills and the collection of contaminating substances depends on people.

8504
CSO: 5000

ENVIRONMENTAL PROTECTION IN DONETSK

Moscow IZVESTIYA in Russian 15 Jan 77 p 5

[Article by D. Gridasov, chairman of the Donetsk Oblast Executive Committee, chairman of the Commission on Environmental Protection of the Council of Nationalities of the USSR Supreme Soviet: "The Sky Will Be Clean"]

[Text] At the 25th CPSU Congress the CC CPSU general chairman, L. I. Brezhnev, said, "...It is possible to utilize nature in various ways. One can cite many examples from the history of civilization where man has left behind barren and lifeless space hostile to himself. But comrades, it is possible and it is necessary to ennoble nature, to help nature more fully cover itself with lifegiving forces. We are all familiar with the expression 'the land of milk and honey.' This is what lands are called where knowledge, the experience of the people, their attachment and love of nature truly work wonders. This is our socialist course."

The grandiose plans of the 10th Five-Year Plan attest to the fact that we unswervingly are adhering to this course. Besides such extremely important measures as the efficient distribution of enterprises, the complex use of raw materials and waste-free industrial technology, the five-year plan calls for allocation of 11 billion rubles for environmental protection.

We must take note of this most important circumstance: in conjunction with plans for the 10th Five-Year Plan, the further increase in industrial output, on the whole throughout the country, will not be accompanied by a growth in pollution of the environment. The situation is just the opposite. There will be a steady decrease.

The Donbass graphically demonstrates what a prudent and economic regard for the environment yields. There are about a thousand major industrial enterprises in the Donetskaya Oblast. Widespread construction and many means of transportation are found here. Concentrated on a relatively small area of the oblast is a population of five million people. All this has placed a great load on the biosphere and involved huge amounts of natural resources in industry. It is obvious that the area's nature was not by its own forces able to reestablish ecological equilibrium and that man's help was needed.

If one examined what was done in terms of environmental protection in the Donetskaya Oblast in the Ninth Five-Year Plan the picture would be impressive. Becoming operational were 275 installations to purify industrial, municipal and domestic sewage and circulating water supply systems. About 90 km of river-bed of small rivers were cleared. Built and modernized were 794 dust and gas trapping devices. At 120 major enterprises work was organized for the use of dust and gas purification. As a result there was a significant drop in air pollution in all the industrial centers of the Donbass.

On the initiative of the deputies of the Ivanopol' village council and the Krasnotorka settlement council a movement began in the Donbass for efficient land use. During the Ninth Five-Year Plan 23,400 hectares of earlier unused land was introduced into active agricultural turnover. In addition, 2,860 hectares of former open-cut mines, dumping grounds and other mining areas were recultivated and given to the kolkhozes and sovkhozes. This experience of timber thinning on 13,500 hectares, is very valuable to us.

This undertaking was seized upon throughout the entire country. Much earlier unused land thanks to this was put into use in the active agricultural turnover. But the amount could be even greater. Of all the industrial ministries only the USSR Ministry of the Construction Materials Industry projected by 1980 to recultivate and give to farms land which was listed for that ministry but was not used. In the future this ministry plans to return as much land as it will annually be allotted. One would like to believe that even the other ministries would follow this example.

The Soviet people fervently approved the decisions of the party and the government aimed at protecting our inhabited environment. This is conclusively attested to by the inspection conducted at the end of last year on measures for protecting nature and for the efficient utilization of natural resources. Participating in this were more than 300,000 people. Among them were 10,000 deputies from local Soviets--workers, kolkhozniks and specialists. At the executive committees of the city, rayon, village and settlement councils of workers' deputies operative groups were set up which, with the obligatory participation of hygienic physicians and specialists, studied in detail the situation concerning matters of protecting the air, soil and water at 1,000 enterprises and at 500 farms in the oblast. Notifications were received by the managers of 62 industrial projects where there were no measures guaranteeing environmental protection, including the directions of the Donetsk non-ferrous alloy plant, the Slavyansk tar paper plant and the Yenakiyevo cement plant.

The oblast investigation headquarters received 3,430 proposals and recommendations, a major portion of which are today already being realized or considered in environmental protection measures of the 10th Five-Year Plan. At this time the competition among workers' collectives has begun under the slogan "The Donbass Will Be Clean!" (IZVESTIYA has reported on this initiative).

Much has been done. And all the same, with all the self-criticism it is necessary to recognize that all the successes of the Donbass people, in comparison to the tasks which have to be solved, are still modest. A portion of the dust and gas trapping devices are in disrepair or are working inefficiently. The questions of protecting the atmosphere are being resolved poorly at many enterprises engaged in ferrous metallurgy, coal mining and chemical production.

And so, at the Donetsk metallurgical plant and at the Zhdanov steel plant Azovstal' as far back as 1965 dust and gas trapping devices for the open-hearth furnaces should have become operational. Nevertheless, their construction still has not begun, for the Ukrainian Ministry of Ferrous Metallurgy [Minchermet] has not found it necessary to assign the necessary funds for this purpose. At the Zhdanov and Yenakiyevo coal-tar chemical plants, equipment (dust and gas purification systems) for smokeless stoking of the coke ovens is inactive and is approaching a worthless state. But as its use might occasion a partial decrease in the output of coke the Ukrainian Minchermet is dragging out putting this equipment into operation.

It is not only in the Donbass but even all throughout the country that the problem of combatting air pollution produced by automobiles and tractors has not been solved. The principle of "Don't take the automobile or tractor out of the garage if it will smoke too much unnecessarily," has not become the practice. It should be like the practice of not allowing transportation to operate with defective brakes.

Of course, the construction of dust and gas purification facilities and the extinguishing of open-cut mining terraces by existing means provide a positive effect. This allows for lowering air pollution. However, a radical resolution of this problem consists of creating new forms of complex production and developing new technology designed for complete utilization of all materials and natural resources based on closed cycle devices and full use of by-products, as well as the use of new types of raw materials and energy.

When speaking about the need for improved protection of water resources, it must be noted that these resources are extremely small in the Donbass and have to be protected even more. Meanwhile, our industry is growing and, consequently, is industry's need for water. The task here is for more construction of industrial closed cycle water supply systems as well as decisively lowering the dumping of impure sewage into open bodies of water.

We must acknowledge that several ministries whose enterprises are located in the Donbass are not doing everything to provide these enterprises with modern purification complexes. Plans are not being carried out for the construction of these projects. They are not properly distributing funds in those branches like the coal and electrotechnical industries, and the heavy transportation machine building industry. For example, enterprises of the Ukrainian Ministry of the Coal Industry annually dump a major amount of insufficiently purified and heavily mineralized mining water into rivers and other bodies

of water. Many kolkhozes pollute water sources by improper application of mineral fertilizer and careless handling of petroleum products.

It is worth mentioning that the ministries that always coordinate their plans for new construction with local organs of authority, occasionally do not coordinate environmental protection measures with them. This must be done. Also while summing up the socialist competition we must consider the contributions of the collectives in the struggle for environmental protection.

What are the necessary measures, besides those which have already been adopted, for more effective protection of the country's environment? It seems to me that, first and foremost we must establish a network of scientific institutions that might combine the efforts of many scientists to resolve the fundamental problems of environmental protection, where they might not only study the questions of utilizations of by-products or water purification, but might analyze the entire complex of corresponding problems. The time has arrived for all environmental protection work to be entrusted to a special all-union organ.

It would seem that already today the USSR Ministry of Instrument Making, Automation and Control Systems has to devote more serious thinking towards more quickly equipping those who fight for environmental protection with efficient control and measuring devices. This is of direct concern to the Donbass and the time apparently has come in the Donetsk-Makeyevka region to set up a network of automated control and measuring stations according to the examples of the Caucasus and Leningrad. These stations study the sanitary condition of the environment so that in the future, according to their indicators, the necessary corrective measures can be introduced into the technological systems of the major industrial enterprises of this zone.

Of extreme timeliness would be the establishment of a specialized subdivision (this might possibly be a scientific industrial association using the conditional title Donbasspromochistka). Using a complex approach, it would resolve environmental protection problems, conduct research and experimental checks, develop plans and prepare for introducing new systems to purify gases and sewage water.

In order to eliminate construction delays on environmental protection projects and to concentrate funds, materials and equipment, there should be set up in the country a network of specialized subdivisions for sewage treatment plants, dust and gas trapping installations, closed cycle water supply systems, for clearing small rivers and for generating other work tied to the protection of nature.

An important role in protecting the environment must be played by further development of volunteer work and other such forms of this work involving such things as an institute of environmental protection inspectors, universities of nature, and "green" and "sky-blue" brigades and patrols. All this will make our homeland even more beautiful.

GREECE

STATISTICS INDICATE ATHENS AIR POLLUTION

Athens I VRADYNI in Greek 8 Jan 77 p 1

[Text] Athens Air Pollution Has Increased

Athens greeted 1977 with dirtier air. According to the last weekly pollution bulletin on the atmosphere, from 20 December to 1 January the Athens metropolitan area experienced an increase in the amount of sulphur dioxide, smoke and suspended particles in the center of the city as well as in the surrounding neighborhoods and suburbs of the capital and Piraiefs. Specifically: In the center of Athens:

--Sulphur dioxide measured an average of 150 milligrams as opposed to 134 for the previous week;

--smoke was also higher--1.81 photometric units, as opposed to 1.54, and

--suspended particles were 189 milligrams as opposed to 138.

In the surrounding neighborhoods and suburbs of Athens and Piraiefs:

--Sulphur dioxide was 94 milligrams, as opposed to 76;

--smoke was 1.08 photometric units, as opposed to 0.87, and

--suspended particles were 223 milligrams, as opposed to 137.

The rise in pollution is attributed to the increased usage of furnaces because of the holidays.

8980

CSO: 5000

TURKEY

FOREIGNERS CITE DANGER OF ANKARA AIR POLLUTION

Istanbul HURRIYET in Turkish 4 Jan 77 p 3

[Text] Ankara (HURRIYET)--The steadily deteriorating quality of air in Ankara is causing near panic among the foreign diplomats stationed in the capital city. The United States, Canadian, and Australian Embassies, describing Ankara's air pollution as alarming, have asked their respective governments to move the embassies out of the city and to pay the embassy personnel "hazardous duty" compensation.

As we all know, geographically speaking, Ankara resembles a soup bowl, and is facing, in fact, an alarming situation generated by rapid population increases, industrial expansion, and haphazard use of fuel for heating. The "air pollution" problem has been under study for some time on several levels, and an increase in the frequency of certain diseases in winter months has brought the pollution issue to the forefront in the public opinion also.

Neset Kocabiyikoglu, secretary of the Chamber of Mechanical Engineers, issued a public statement yesterday concerning the studies conducted by foreign legations, and released to the press photocopies of the reports several embassies have sent to their governments.

The United States, Canadian, and Australian Embassies request "hazardous duty" pay for the personnel assigned to Ankara, and offer the following justification for their request:

"Children, particularly if they are expected to live here in winter months, should not be sent to Ankara under any circumstance.

"People who have a history of respiratory disorders, such as asthma or chronic bronchitis, should receive a thorough medical checkup prior to assignment to Ankara. Personnel who suffer from any of those disorders should be assigned elsewhere at once.

"Personnel who have to spend part of their life under the atmospheric conditions which exist in Ankara should be granted compensation in the form of hazardous duty pay."

The U.S. Embassy's Press Attache's Office, however, in a release pursuant to Mr Kocabiyikoglu's statement at the press conference, denied that the embassy had ever conducted an air pollution survey. The press attache's release also denied that the embassy had prepared and sent a report on the matter.

7244

CSO: 5000

TURKEY

ANKARA TAKES PRECAUTIONS AGAINST AIR POLLUTION

Istambul MILLIYET in Turkish 6 Jan 77 pp 1, 10

[Text] Ankara--Special--The Ministry of Industry, as a first step to fight air pollution in Ankara, will install filters, at no charge, in the chimneys of buildings in the Kizilay and Sihhiye areas, and inspect the lignite coal and fuel oil shipped to the capital.

Minister of Industry Abdulkerim Dogru reported that a concerted effort is underway to reduce air pollution by 50 percent. "Pollution in Ankara's air has reached a record high," he said in his statement, "Ankara's air pollution now ranks as the worst in the world."

"In view of the worsening situation," Mr Dogru continued, "the Ministry of Industry decided to tackle the problem with the help of studies conducted by various universities, health organizations, and private citizens."

"As an initial step," Minister Dogru added, "we are planning to install air filters in the chimneys of tall buildings at Kizilay and Sihhiye where the city's air is at its dirtiest."

"We also decided to set up a mobile laboratory," Mr Dogru reported.

7244

CSO: 5000

END